

Scientific Contacts

Saw Wai Hla (Group Leader), shla@anl.gov
 - LT-STM, SP-STM, AFM

Anand Bhattacharya, anand@anl.gov,
 - oxide MBE

Seth Darling, darling@anl.gov
 - solar energy, organic PV, AFM, QEMs

Brandon Fisher, fisher@anl.gov,
 - magnetometry, STM/SEM, XRD

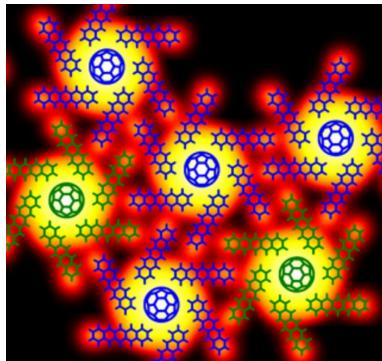
Jeffrey Guest, jrguest@anl.gov
 - STM, AFM, ultrafast microscopy

Nathan Guisinger, nguisinger@anl.gov
 - STM, AFM, graphene

Xiao-Min Lin, xmlin@anl.gov
 - synthesis of nanocrystal building blocks

Dan Rosenmann, rosenmann@anl.gov
 - evaporation, deposition, sputtering, MBE

Electronic & Magnetic Materials & Devices



Major Tools

- UHV SPM (AFM/STM) (Omicron Nanotechnology)
- 4-probe SEM (Omicron UHV Nanoprobe)
- VT-AFM (Omicron XA), LT-STM
- Scanning probe microscope, AFM (Veeco)
- Complex Oxide MBE (DCA R450D Custom)
- Kurt Lesker electron beam evaporator and sputtering, deposition
- Magnetometry (QD PPMS & MPMS)
- Solar simulator, QEMs (Oriel)
- TGA/DSC
- Luminescence/UV-vis-NIR
- X-ray diffractometer (Bruker D2 & D8)

Scientific Contacts

Dean Miller (Group Leader), miller@anl.gov
 - oxide thin film and self-assembled synthesis

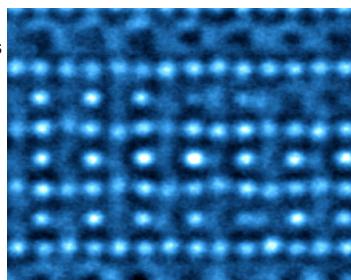
Rachel Koritala, koritala@anl.gov
 - SEM/TEM trainer

Joyce Wang, jewang@anl.gov
 - EMC Facility Manager

Jianguo Wen, jwen@anl.gov
 - ACAT, batteries, PV

Nestor Zaluzec, zaluzec@aaem.amc.anl.gov
 - transmission, scanning transmission, and analytical electron microscopy (FEI Tecnai)

Electron Microscopy Center



Major Tools

- ACAT: Argonne Chromatic Aberration-corrected TEM
- FEI Tecnai F20ST TEM/STEM
- Zeiss 1540XB FIB-SEM
- FEI CM30T, analytical transmission electron microscope
- Hitachi S-4700-II high-vacuum SEM
- FEI Quanta 400F environmental and variable-pressure SEM

Scientific Contacts

Daniel Lopez (Group Leader), dlopez@anl.gov
 - MEMS/NEMS technology

David Czaplewski, dczaplewski@anl.gov
 - MEMS/NEMS, ICP CVD

Ralu Divan, divan@anl.gov
 - lithography, nanogels, MEMS/NEMS

C. Suzanne Miller, csmiller@anl.gov
 - dicing saw, Karl Suss aligner

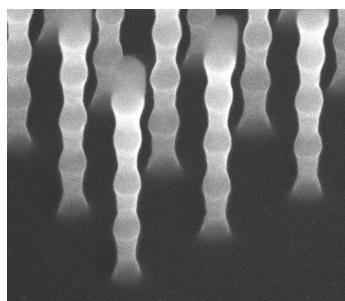
Leo Ocola, ocola@anl.gov
 - nanofabrication, electron beam lithography

Liliana Stan, istan@anl.gov
 - ALD, PVD, sputtering, evaporation

Anirudha Suman, sumant@anl.gov
 - diamond-based NEMS, CNT, graphene

Il Woong Jung, ijung@anl.gov
 - focused ion beam lithography

Nanofabrication & Devices



Major Tools

- JEOL 9300, 100kV electron beam lithography
- Raith 150, 30kV electron beam lithography
- FEI Nova 600 NanoLab DualBeam FIB/SEM
- Karl Suss MA6 Optical mask aligner
- Nanonex NX-3000 Nanoimprint
- Direct write optical lithography
- Interferometric lithography
- AJA oxide sputtering
- Wet chemistry & metrology
- SPM, PSIA XE-HDD
- Deposition (ebeam evaporator and sputtering, Sundew ALD, MOCVD)
- Lambda microwave plasma CVD nanocrystalline diamond
- Thermal/PECVD for CNT/graphene synthesis

Scientific Contacts

Gary Wiederrecht (Leader), wiederrecht@anl.gov

- microscopy below diffraction limit, transient absorption/emission spectroscopy

Chris Fry, hfr@anl.gov

- synthesis, peptide synthesis, HPLC, CD

David Gosztola, gosztola@anl.gov

- lasers, Raman microscopy

Yuzi Liu, yuziliu@anl.gov

- analytical TEM

Elena Rozhkova, rozhkova@anl.gov

- bio(in)organic, biological chemistry, synthetic biology, GC/MS

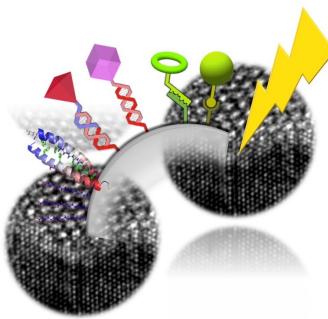
Richard Schaller, schaller@anl.gov

- transient absorption/emission spectroscopy

Elena Shevchenko, eshevchenko@anl.gov

- 2-D and 3-D nanoparticle assembly, SEM

Nanophotonics & Biofunctional Structures



Major Tools

- Ultrafast transient absorption spectroscopy
- Confocal Raman microscope, Renishaw
- VIS/NIR microscopy
- Time-resolved emission spectroscopy
- Time-correlated single photon counting
- Ultrafast microscope
- FTIR (Thermo-Niclet)
- Fluorescence spectroscopy
- Field-emission TEM (JEOL 2100F)
- Field-emission SEM (JEOL JSM7500F)
- Electron paramagnetic resonance (Bruker)
- Circular dichroism spectrometry
- Functionalization, electro/photochemical
- HPLC, GCMS
- Laser Scanning Confocal Microscope (Zeiss)
- Post-self-assembly processing
- Peptide synthesizer
- Synthesis & surface modification of nanoparticles
- ZetaSizer Nano, Malvern

Scientific Contacts

Stephen Gray (Group Leader), gray@anl.gov

- nanophotonics, electrodynamics

Maria Chan, mchan@anl.gov

- photovoltaics, photocatalysts, thermoelectrics, batteries

Pierre Darancet, pdarancet@anl.gov

- photovoltaics, optical transport

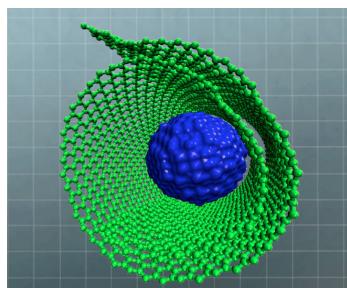
Michael Sternberg, sternberg@anl.gov

- software development

Subramanian Sankaranarayanan,

- ssankaranarayanan@anl.gov
- nanoscale oxide energy materials

Theory & Modeling



Major Tools

- Nanoscience Computational Facility
30 TFlop cluster for:
Density-functional-based tight-binding (DFTB) electronic structure package
Time-domain nanophotonics simulation
MPI-based parallel versions of nanophotonics and tight-binding codes GPAW; real space, grid-based DFT-PAW
- Access to Argonne computer facilities
- Support for experimental projects
- Support for theoretical projects

Scientific Contacts

Ian McNulty (Group Leader), mcnulty@anl.gov

- diffraction, holography, x-ray microscopy, optics

Martin Holt, mvholt@anl.gov

- x-ray diffraction and fluorescence

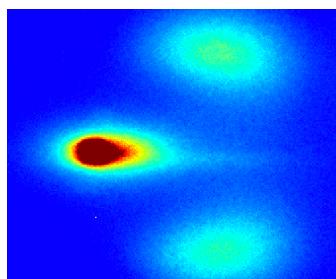
Volker Rose, vrose@anl.gov

- synchrotron x-ray scanning tunneling microscopy

Robert Winarski, winarski@anl.gov

- x-ray imaging and tomography

X-ray Microscopy



Major Tools

- Hard X-ray nanoprobe beamline, sector 26 of APS
- Scanning probe X-ray diffraction microscopy
- Scanning probe X-ray fluorescence microscopy
- Full-field two-dimensional transmission imaging and tomography
- Heating/cooling specimen stage
- 30 – 50 nm resolution, 8 - 12 keV
- In situ/in operando experiments
- Synchrotron x-ray STM (SX-STM)